REMARKS

This Amendment, filed in reply to the Office Action dated October 9, 2009, is believed to be fully responsive to each point of objection and rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-12 are all the claims pending in the application. Claims 6-10 and 12 are withdrawn from consideration. Claims 1-5 and 11 are rejected.

Drawings

Applicants thank the Examiner for accepting the drawings filed on April 4, 2006.

Foreign Priority

Applicants thank the Examiner for acknowledging Applicants' claim to foreign priority and indicating that all certified copies have been received.

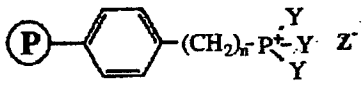
Information Disclosure Statement

Applicants thank the Examiner for returning a signed and initialed copy of the PTO Form SB/08 that accompanied the Information Disclosure Statement filed October 18, 2007, indicating consideration of the references therein. Applicants would also like to bring to the Examiner's attention the Information Disclosure Statement filed on April 4, 2006. Applicants respectfully request that the Examiner consider the references listed therein.

I. RESPONSES TO REJECTION UNDER 35 U.S.C. § 103

On page 3 of the Office Action, Claims 1-5 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki *et al.* (US 5,932,178) in view of Osaki *et al.* (JP 08-325169) and in further view of Hyodo *et al.* (US 6,827,838B2).

In particular, the Office Action asserts that Yamazaki *et al.* disclose a process wherein ^{18}O water containing ^{18}F is passed through a polystyrene resin column to trap ^{18}F as the column is heated within a range of from 80 to 100°C. The Office Action further asserts that Yamazaki *et al.* teach that acetonitrile is passed through the column containing ^{18}F to dry the labeling reaction resin, helium gas is next passed through the labeling reaction resin, and a triflate solution is passed through the dried labeling reaction resin column to cause a displacement reaction. Although the Office Action states that Yamazaki *et al.* fail to disclose the step of passing carbon dioxide through the column or the anion-exchange resin recited in Claims 4 and 11, Osaki *et al.*, is relied on for a phosphonium resin, having the following formula:



wherein the ring P is a crosslinked alkylstyrene halide-styrene copolymer carrier; Y is an alkyl; and Z is a counter ion, not excluding HCO_3^- or CO_3^{2-}.

The Office further relies on Hyodo *et al.* for a teaching that ^{18}F is recovered from the ion exchange resin by using carbon dioxide gas (column 1, lines 29-49). On page 4 of the Office Action, the Examiner concludes that it would have been obvious to one skilled in the art to substitute the resin of Osaki *et al.* for the polystyrene resin of Yamazaki *et al.* because allegedly, one of ordinary skill in the art would have made known substitutions on compounds that are "similar in structure and function in order to observe the effects on the function of such compounds and to use the observations/data to further manipulate a compound to generate the desired effect." The Examiner further concludes that it would have been obvious to one

ordinarily skilled in the art to utilize carbon dioxide to completely and efficiently separate and recover ^{18}F from ^{18}O water and allow for the reuse of ^{18}O water.

Applicants respectfully traverse the rejection. The Office Action has failed to establish a *prima facie* case of obviousness for at least the following reasons. In particular, the Office has failed to establish that one of ordinary skill in the art would not have been motivation to use carbon dioxide gas in the process of Yamazaki *et al.* at least because Hyodo *et al.* teaches away from using carbon dioxide gas due many drawbacks. Furthermore, Applicants showing of unexpectedly high production yields of fluorine compound using carbon dioxide gas, when compared to the yields of fluorine compounds produced by the method of Yamazaki *et al.*, which utilizes helium gas, further establishes nonobviousness.

Initially, Applicants note that in order to establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. § 2143. The factual inquiries which must precede a legal conclusion on obviousness are the determination of (1) the scope and content of the prior art, (2) the differences between the claimed invention and the prior art, (3) the level of ordinary skill in the art, and (4) objective evidence of nonobviousness, such as commercial success, long-felt but unsolved needs which the invention has satisfied, failure of others to make the claimed invention, copying of the alleged invention, and unexpected results brought about by the invention. See *Graham v. John Deere Co.*, 383 U.S. 1 (1966) and *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007).

Yamazaki *et al.* disclose a method for synthesizing fluorodeoxy glucose (FDG) using an on-column method proposed by Hamacher *et al.* See Col. 1, lines 57-60. Example 4 of

Yamazaki *et al.* disclose that ^{18}O water containing ^{18}F is introduced into a resin, acetonitrile is further introduced into the resin column, followed by helium gas to sufficiently dry the column. Col. 20, lines 18-55. Yamazaki *et al.* fail to disclose or suggest the use of carbon dioxide gas in the method of producing FDG.

The teachings of Hyodo *et al.* fail to cure the deficiency of Yamazaki *et al.* In the background section of the Hyodo *et al.* patent, Hyodo describes a conventional ^{18}F recovery method wherein ^{18}F is separated from ^{18}O water by ion exchange and then ^{18}F is recovered by using carbon dioxide gas or potassium carbonate gas. Col. 1, lines 35-50. However, Hyodo *et al.* teaches away from using of carbon dioxide gas, specifically stating that chemicals such as carbon dioxide are "not desirable" due to impurity problems and drawbacks regarding the control of flow rate of a ^{18}F solvent and the clogging of the ion exchange resin column. Col. 1, lines 44-50. In fact, none of the examples in Hyodo *et al.* teach or motivate one of ordinary skill in the art to use carbon dioxide gas. To the contrary, Hyodo *et al.* teaches away from using carbon dioxide gas because it contains several drawbacks, such as clogging and causing impurities. It is improper to combine references where the references teach away from their combination. MPEP § 2145 (citing *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983). Additionally, Hyodo *et al.* fail to teach that carbon dioxide is passed through the column "between the step of dehydrating the resin and the step of introducing the reaction substrate," as claimed.

Further still, the gas disclosed by Hyodo *et al.* is used for a completely different purpose than from the instant application. The gas in Hyodo *et al.* is used to recover ^{18}F, whereas the instant application teaches that carbon dioxide is used to remove trace amounts of moisture and supplement CO_2 lost in the prior steps of recovering ^{18}F. Compare col. 1, lines 35-50 of Hyodo

et al. with page 20, lines 16-25 of the instant application. Thus, one of ordinary skill in the art would not have been motivated to substitute helium gas, a gas used to dry the column, with carbon dioxide gas, a gas which the prior art cautioned to use, for the purpose of recovering ^{18}F.

Moreover, as MPEP § 716.02(a) states, "[e]vidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut *prima facie* obviousness. 'Evidence that a compound is unexpectedly superior in one of a spectrum of common properties . . . can be enough to rebut a *prima facie* case of obviousness.' ... *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987) ... [p]resence of a property not possessed by the prior art is evidence of nonobviousness. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963)." The claimed invention is not obvious at least in view of the unexpectedly high production yields of fluorine compound using carbon dioxide gas, when compared to the yields of fluorine compounds produced by the method of Yamazaki *et al.,* which utilizes helium gas. The collection rate using the helium gas as disclosed by Yamazaki *et al.* is low, compared to carbon dioxide. Specifically, Tables 1-3 of the instant application compares the yield of ^{18}F when different resins were used with carbon dioxide gas, helium gas, or nitrogen gas. As shown in Table 1, the yield values using carbon dioxide was high (94.8%) as compared to using helium gas (83.7%) and nitrogen gas (85.9%). Thus, one of ordinary skill in the art would not have expected, nor reasonably predicted, that the gas utilized in the claimed process would produce unexpectedly high yields of fluorine compound, considering the yields disclosed in the art for methods using different gases were significantly lower.

For the foregoing reasons, Yamazaki *et al.*, Osaki *et al.* and Hyodo *et al.* do not teach the use of carbon dioxide gas in the process for producing radioactive-fluorine labeled compound. Accordingly, Yamazaki *et al.*, Osaki *et al.* and Hyodo *et al* taken alone or in combination, do not teach each and every limitation of Claim 1. For these same reasons, Claims 2-5 and 11 are not rendered obvious by the cited references.

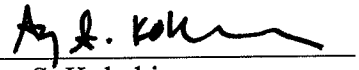
Reconsideration and withdrawal of the rejection under § 103(a) is respectfully requested.

II. CONCLUSION

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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